Nidec

Measuring Quality

Application Information

Resistive Forces on Rollercoaster Tracks

Theme parks across the country must test their amusement rides constantly to verify safety for all visitors. Roller coasters, being the most demanding, are thoroughly inspected by trained technicians daily for obstructions, potential insecurities, excessive wear and even damage in order to verify every component is in proper working order.

Intrinsic manufactured stresses, repetitious dynamic forces, plus environment and weather fluctuations collectively add to the accelerated performance degradation of coaster components, in particular the cars and track. The combination of these elements creates the need for a rigorously controlled predictive maintenance program that schedules repairs to minimize downtime and associated customer dissatisfaction due to inoperative rides.

The extensive amount of man-hours and corresponding costs involved with the inspection creates a great need to streamline the process to reduce time. One convenient method used for years at theme parks around the globe is to utilize a Nidec-Shimpo Digital Force Gauge model FGV-500HXY with 500 lb. (250 kg) capacity to measure resistance forces produced between the coaster cars and the tracks. Park technicians hook the force gauge to the front of the cars and physically pull them along a straight length of track. While pulling, they monitor the gauge to detect if any increased forces beyond a predetermined threshold are sensed due to imperfections in the track.

By testing the coaster track with the FGV-500HXY Digital Force Gauge, they can immediately pinpoint the precise location of the irregularity for further inspection to determine proper maintenance actions required. This simple procedure utilizing the force gauge proves to be a quick, accurate and low-cost method for finding imperfections in the coaster. Without the Nidec-Shimpo digital force gauge, a tightly run predictive maintenance program would be difficult to uphold, resulting in additional ride outages, dissatisfied customers and long term lower sales.

Equipment Used

- *FGV-500HXY Digital Force Gauge*

FGV-500XY Digital Force Gauge

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